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GYMNASTIC PAPERS

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645 Madison Avenue New York City

Series A *Number 2*

Why Do We Teach Gymnastics?

BY

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PRICE:—TWENTY-FIVE CENTS

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UNIV. OF
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Gymnastics

One individual takes gymnastics for his health; another to overcome his awkwardness; a third for the pleasure that he derives from bodily activity; a fourth to get an opportunity to show his ability and to be admired by others. Each has a mere personal object in view.

We may endeavor to fill the varying wants of different individuals, and thus address ourselves to one class of clients or another. But that is essentially a commercial question. The one has something to sell which the other wants to buy.

This narrow, personal, or commercial aspect can, however, be allowed only a very small place in the thoughts of those who seriously advocate gymnastics. They do not concern themselves with individual desires, but claim that gymnastics is imperatively needed for the race. They wish the community, the State, the Nation, to step in to furnish gymnastics to all its citizens, claiming that thereby the purpose of the State may be better realized. Supplying the means of happiness to one individual here, to another there, is properly the function of private initiative. The State has nothing to do with it. She should not do anything for my benefit, or your benefit, except so far as it redounds to her own benefit. All that does not so redound lies outside of her functions. You may send your boy to school in order thereby to assure him a greater amount of

TO WILL AMERICANA

happiness in life. But the State receives him at school not primarily for his sake, but for her own, to assure herself that he shall fill his proper place as a future citizen.

When, in a general discussion, we speak of the purpose of gymnastics, we must therefore focus our attention, not on filling the individual desires, but on an inquiry as to whether, and in what manner, the general effectiveness and usefulness of the citizen may be enhanced. If a general introduction of gymnastics will make better citizens, then it is the duty of the State to furnish it. If on the contrary it merely addresses itself to comparatively few individuals, the State may or may not consider herself bound to undertake the work, which in such case might perhaps assume the character of a semi-charitable institution, such as schools for defectives, or possibly be classified with subsidized operas or other agencies for a specialized education.

But this is our contention, on the correctness of which we stand or fall, that gymnastics increases the general effectiveness and usefulness of the average individual coming under its influence to such a degree that the State would be well repaid by a higher level of her citizens for the labor and expense of the general introduction of this subject.

We argue for the introduction of gymnastics into the schools, because the school is the agency by which the State lays the foundation for the usefulness of the individual, and because it is through the public school that the greatest multitude may be reached.

Like everything else, the school is constantly undergoing a process of evolution. The school of to-day is quite different from that of yesterday, and to-morrow will see new changes. But through it all the general

purpose is clear: the school shall fit for life, shall educate. Not in the sense that it is to be considered the only, or even the chief, educative agency. Surrounding conditions force an education upon us whether we have schools or not. This process is an effective one. Those who, from one cause or another, respond improperly to the influences of surrounding conditions are crowded to the wall, weaken, disappear, are weeded out. Those who react most in accord with nature's laws are rewarded, strengthened, saved to propagate the race. But nature is a hard taskmaster. She is just, but knows no mercy. If the individual development be left to fortuitous circumstances, there are many, very many, who will fall by the wayside, because of the mistakes they make. To help the individual, to make it possible for him to profit by the experiences of those who have passed before him, the school was brought in. It is not intended that it shall supply a substitute for education through life; in fact, it cannot, but it rather serves as a valuable complement. The means it utilizes vary with the changing experiences. At first the school endeavored to assist the individual by furnishing him knowledge of isolated facts which might be of value in after life. A mass of names, dates, and events constituted history. There was no study of the development of thought and institutions. The education in geography consisted chiefly in the cramming of boundary lines, names of cities, their location, the number of their inhabitants, the altitude of mountains, the length of rivers. Natural conditions and resources which influence the civilization of man and determine the direction of his pursuits were given no heed. The language teacher dealt mainly with glossaries, grammatical rules, paradigms, not with the thoughts expressed. Botany

was a jumble of names, families, classes, orders of plants, not their relation to the development of life and to man. Such instruction as was offered in physical activity had for its purpose to give the pupil a direct utilitarian ability in definite circumscribed fields. It was the teaching of trades and crafts. Education in the modern sense had little place in this school. We might say that the child-mind was considered as a miniature of the adult mind, while the physical child was looked upon as a pocket edition of the full grown man and woman. For both mind and body growth was considered all-essential, and was to be brought about by passive absorption of new material. The development, the gradual change, concomitant with mere growth, was overlooked.

But new ideas were born, developed. It became evident that the facts poured into the child's mind, and the abilities given his body, were too few to fill the needs of a life which grew ever more complex. Comenius, Rousseau, Pestalozzi, and others urged the presentation of more facts than formerly. But at the same time they pointed out that the facts should not merely be presented to the passive pupil. He should himself gather them in by his own activity. Thus came the impulse to "learning by doing," of which we now hear so much, and which led to school laboratories, school gardens, manual training, all designed to open new avenues to the mind, to train the senses for observation, to focus attention, to develop will.

Building upon this foundation, but recognizing the inadequacy of the presentation of isolated facts, however valuable, however acquired, later reformers, notably Herbart and his pupils, revolutionized the methods of the school by setting a higher ideal for it. The facts were joined together, co-ordinated, correlated.

The new and unknown facts were attached to the old and well known ones by strong bonds of union; associations were established; relations were considered. Knowledge was no longer a conglomeration of memorized facts, but a woof in which each fact was firmly united with a large number of other facts, so that each fact now, because of its many relationships, frequently rose in consciousness to be utilized for the elucidation of many conditions with which it had no connections when presented according to the old methods. Knowing became synonymous with understanding, and the school's ideal became action in conformity with the understanding; it became the building of character.

At the present time, the school is primarily an institution for the development of intellect and morality, of power to think right, to feel right, and to will right. If it succeeds in its purpose, the future citizen is supposed to act right.

As far as we can see now, this will always remain the central idea in the school. It was mainly through a superior mental development that our ancestors succeeded in elevating themselves above the rest of the animal kingdom. It was by the development of higher and ever higher mental and moral characteristics that they gained the mastery over nature. It is through the development of these that we may hope for a still further rise. It is by the fostering of thought, feeling, and will, that the school shall make useful citizens. Thought, feeling, and will are the objects with which the school deals. If gymnastics is to have a place in the school, it must have a favorable influence on these, directly or indirectly.

But keen thought, lofty feelings, and right will are of value only so far as they become actualized in mo-

tion. They are important to the race only if they find their expression in action. Every thought and every feeling which glimmer only in the consciousness of the individual, without modifying his actions, are wasted. Humanity is not benefited by him who imprisons his thoughts and feelings within himself, but by him who seeks to give them an outlet in some form of action. Action is the only means by which the environment may be influenced, the only means by which the citizen may be useful. Thoughts and feelings do not suffice, however good they may be. Will without action is sterile. Action is the fruit of will. That is a true ethical formula. "Be ye doers of the word, and not hearers only" is a good Christian doctrine. "What we think, or what we know, or what we believe, is, in the end, of little consequence. The only thing of consequence is what we do" (Ruskin).

If all this be true—and nobody denies it—the school must offer training in doing, in will—expression. It must habituate the child to realize the thoughts and feelings in motion, if it is to rear a race of doers; if the future citizens are not to be mere thinkers and feelers without initiative; if the pupils, when leaving school, shall be able to take their places in the active life around them; if they are not to be mere onlookers, standing by philosophizing over what is happening, without endeavoring to direct the events in accord with their thoughts and feelings.

Those who have read aright the history of the birth of gymnastics in Germany and Sweden, those who have been able to look behind the mere forms for the spirit of the time, for the force which drove Jahn and Ling to the fulfillment of their great mission, must be impressed by the fact that the ideals of these men are the ideals

of the school to-day. Their native countries weakened, dismembered, victims of scorn, subjected to insults and injustice, while their countrymen in careless indolence saw nothing, did nothing, hoped for nothing. Such were the scenes upon which Ling and Jahn glanced. Such were the pictures which stirred them to activity. To make useful citizens by uniting strong bodies, strong minds, and strong characters, that was the aim of Ling, that was the object of Jahn, that is the purpose of our school to-day.

The early gymnasts recognized the necessity of systematic training in doing. They recognized that this was of equal importance with systematic training in thinking. Therefore, they introduced gymnastics, sports, physical activity of various kind. Our modern educators have arrived at the same conclusions. Motor training is introduced in every modern school. And hope is entertained that thereby not only shall the pupils acquire some direct utilitarian dexterity absolutely necessary for everyone in a civilized community, such as writing a legible hand, but that attention shall be trained in various directions, that power of observation may be developed, that knowledge may become more many-sided, because gained through several senses, that manifold relations may be established between facts which naturally belong together, and that there may be created the ability and the will to realize thoughts and feelings in action. The object in view is to make men and women ready and able to take their places as active members of the community.

In this motor training which our schools offer, gymnastics and sports enter nominally, but their place is rather without, than within, the curriculum. They are not recognized as true educative agencies to be accorded

the same care and attention as other branches. Where they are allotted a place in the school, the place is insignificant, and they are allowed to develop more or less at haphazard. When we speak of motor training in our school as it is to-day, we therefore mean those branches which have been consciously developed for the purpose of assisting in definite directions in the real education of the child. The motor training brought to our youth by the gymnasts still remains mainly outside the school. But the difference between this motor training and the one more or less thoroughly recognized by the school makes it incumbent on us to ascertain whether the former can bring into the school some new educative force which may make it desirable as a complement to the latter.

The changes urged by the elder reformers in the field of the school was, to a great extent at least, based on the necessity of increasing the number and vividness of the sense perceptions presented to the child. It was recognized that one sense alone does not give us a satisfactory knowledge. An object is known in the ratio that it gives us sensations. The more sensations we receive from it, the better we know it. For a complete knowledge of it, it is not enough to see it. To know it thoroughly, we must hear the sound it emits when struck; we must get hold of it, feel it, lift it, turn it, handle it. We must represent it by drawing, by modeling. Thus only can we gain a full cognition of it. Sense perception is the basis of all mental life. The fewer sensations, the lower mentality. Idiocy is to a great extent characterized by a dearth of sensations.

Other things being equal, the more numerous and the more acute the sensations, the richer the mental life. Anything that we can do to render sensations more

numerous and more keen is advantageous to the intellect. (Especially is this true in childhood, and more particularly in early childhood, when the sensational foundation for mind development is laid.)

The sense organs can be developed. One of the reasons why Rousseau brought "Emile" away from the cramping influences of "over-civilization" to the wide expanse of "nature" was to give scope to the exercise of the senses. The blind develop their sense of touch to a remarkable degree. The expert in linen detects by touch adulterations which escape the average person. The fencer becomes aware of the slightest movement of his opponent's foil so rapidly and unerringly that it appears as if he were able to read the latter's thoughts even before they have taken form. And so on. Motor training is the only means by which this education of touch and muscular sense may take place. Numerous perceptions, clear-cut, well-defined, are thus formed regarding distance, direction, weight, force, resistance, effort, and so on, which without motor training remain dim and vague. The judicious mother can give powerful impulses in this direction to her little one simply because of her mother-feeling. But I doubt whether much good can come from the average mother undertaking systematic work with her infants. She knows too little of child-nature. We know too little to guide her properly. There would be too great a danger of instituting a forcing-process, unhealthy and pernicious. There is only one absolutely safe rule, by following which we may at least cause no great injury, even if we do not gain the greatest possible development: supply the infant with space to move in, allow it to handle the different objects in this space, and leave the process to nature. The curiosity and instinct of the child will guide it

rightly. You may help it, but if you do not know how, leave it alone. In any event, this is a matter for the parent, not for the teacher; for the home, not for the school.

But the child grows. It comes to the Kindergarten. Here it is guided more systematically than formerly. The senses receive due attention. Motor training is available in many forms. Regulated play and games, songs, paper folding and cutting, building with blocks, using the "gifts," moulding in sand or clay, drawing, and so on. Formal gymnastics in the true sense does not enter. It should not, it cannot, for reasons to give which would carry us too far. But gradually the movements take definite form, become directed not only in a general way, but more closely predetermined by the teacher. We enter the primary school. Gymnastics is in the curriculum.

Like all forms of motor training it educates the senses. That is one of the benefits our pupils gain from it. That is, and must be, recognized by all. We need no discussion of the matter. It is self-evident. Gymnastics must address itself to the training of sense perception. It must be presented in such a manner that the senses are unfolded by it, not stunted or dulled. It must be presented in the natural order of sense development. But that is a principle that is not peculiar to gymnastics. It belongs to everything taught in the school. So, when Dr. Arnold enunciated this principle in his paper,[1] I cannot understand that he thereby enriched our knowledge of gymnastics. He only reiterated a truth, generally recognized by teachers of all branches, even if they, as must be admitted, frequently

1. Some of the principles that guide me in teaching German gymnastics. Report of the tenth annual meeting of the American Association for the Advancement of Physical Education.

overlook it in their daily lessons. He certainly did not advance any principle peculiar to the system which he represents. The principle is common to all systems. Dr. Arnold makes much of gymnastics for sense training. Dr. Hartung has followed his lead.[1] Has gymnastics, then, any particular claims to be considered as a means of training the senses? Is it in any way superior to other branches? Is it superior to other forms of motor training? These questions are important. Upon the answer depend to great extent our methods.

Gymnastics differs from all other formal modes of motor training in our schools inasmuch as it utilizes the whole body as a sense-organ, while the latter address themselves only or mainly to the hand. To be able to arrive at cognition, not only by sight, verified by manual touch, but by sensations derived from muscular contractions in legs, thighs, back, chest, may at first sight appear to be a great gain, a considerable widening of the field upon which our mental life is based. But is it so in reality? Pure sensations probably never exist. They are mere psychological abstractions. As soon as a sensation is received in consciousness, it is a perception. The matter of consequence is not, therefore, the sensory stimuli we receive, but the perceptions to which they give rise. The question whether we get more or less stimuli or from what part of the body they enter our consciousness, is of small importance to our mental life, compared with the one whether they are clear, distinct, and easy of interpretation. And even the very best gymnastic training can never bring us to such clear and definite perceptions from our legs and back and the larger articulations as are those which we receive from the hands and the fingers. I do not

1. Mind and Body, vol. 9, p. 145.

wish to belittle the perceptual gain by gymnastics, but I can never be brought to the opinion that this gain is at all to be compared with what we are daily gaining from manual training in its various forms. The perceptions received through gymnastics may help to give a considerably greater formative material for the mind to elaborate. But the formative material thus used will always be decidedly inferior in quality to that brought us by other methods. And, therefore, I can but assert that those who take it upon themselves to advocate gymnastics mainly, or even to a great extent, upon the ground that it furnishes us with new and important sense perceptions, are making a grievous error. Gymnastics must be brought into the very heart of our educational system for several reasons. But to bring forth claims for it as a powerful agency in training the perceptions seems to me to be a mistake, based upon the most narrow conception. It is exactly in line with the claims of the one-idea-men in medicine. It is, according to my viewpoint, as if a general were using his auxiliary troops as his main forces, employing them for the main attack when they should be utilized only for supporting and strengthening his position. I think we shall always be obliged to consider the development of perceptions through gymnastics, but we cannot make this a prominent part of the educational value which we expect from a general introduction of this branch into our schools.

And, after all, whatever view we may take of the development of perceptions from our work, we are bound to recognize that this training belongs to the earliest period of life. For the small child it is, I hold, of no inconsiderable importance to enlarge and enrich the field of sensory perceptions. Perhaps it may be counted as of great value up to ten or twelve years of age; but

thereafter its value surely rapidly diminishes. The mind after that age deals, not with things, but with relations. The mind then is built, not upon the formation of images, but upon the growth of general notions. Perception wanes, conception waxes. And we should certainly not allow ourselves to be carried away by any idea that conception is the mere adding of percept to percept. The percepts must be present, vivid and numerous, for the formation of concepts. But conception is not a mere conglomeration of percepts. It is a process of abstraction. It is the relating, the comparing, the classifying of percepts according to their similarities and dissimilarities. It is a process of thought. The percepts are only the material of thought. By furnishing a richer thought material the motor training assists thinking, with all that it implies of reflection, imagination, judgment, and so on. By giving richer perceptual content to the mind, possibilities for more associations are furnished. But beyond that it cannot go. The processes themselves can only be developed by their own practice. You cannot learn to think through gymnastics. Practice in thinking is the only way by which we learn to think. You can only utilize the additional percepts given by gymnastics as material for thought. And as these are dim and vague, the thoughts to which they give rise will be dim and vague. Some enthusiasts apparently claim more for motor training in general and for gymnastics in particular, as assisting thought and reflection, than is warranted by the facts. Just as I am willing to grant a certain efficiency to gymnastics in developing sense perception, so I am willing to admit that it may assist in forming concepts. Just as willing as I am to assert that it is of some advantage to the pupil to receive his perceptions of various kinds through his whole

body, so I acknowledge that gymnastics may be utilized to fortify and strengthen concepts. But positive as I am that by far the most important percepts gained by motor training are not gained by that particular form called gymnastics, I am equally positive that the concepts formed by gymnastics are of small importance compared with those reached through other avenues. I do not deny that gymnastics contributes to right thinking by its direct influence on the mind. But I do deny that to be the main benefit derived from it.

It is proper that we ourselves should be enthusiastic. It is but right that we should believe thoroughly in the value of our own work. But it is a dangerous procedure to make sweeping statements which cannot be substantiated or verified. Does Dr. Arnold consider that the appreciation of weight, distance, resistance, etc., can be gained only through gymnastics, or very much better through gymnastics than through other means? Does he think that the additional knowledge received from gymnastics is of great value to our mental development? Does Dr. Hartung believe that the "multitude of conceptions and judgments" arrived at through gymnastics are of vital importance to a well educated member of society? I do not. I could not bring myself to advocate taking up the children's time with gymnastics, if I considered that these conceptions and judgments were the chief benefit they would derive from it. I would not have my own children "complete their education" through gymnastics, did I not think that there were more vital questions involved. I do believe that the training of the senses, the development of conceptions, etc., through gymnastics is the very least educational gain to be derived from it, and also do I believe it better for the cause of physical education that we

treat the direct increments in that line as mere incidentals, which may well be put in parentheses when we array the benefits of gymnastics. We must acknowledge that they are secured better, quicker, and more completely by other branches in our schools. I do not deny them. Nor does anybody. But I believe that our German friends are making a great tactical mistake in laying such stress on these matters. Rather might we all join hands in attacking the problem from a different standpoint.

The time is past when the school worked mainly for the development of thought. Everywhere the demand is growing that the school shall form character first of all. But what is character? I do not know that anyone has ever given a perfectly satisfactory definition of the term. We might perhaps say, however, that it is the general attitude of the individual to life, shown by his knowledge and feeling, and by the manner in which he reacts. In fact, the mode of reaction seems to be the essential factor in character. And hence, character-building means training in proper reaction. It means the development of volition first of all. And if so, motor training is the sine qua non of character formation, because the motor organs are the organs of the will. The school now admittedly strives to develop will by the various forms of motor training in its curriculum. So far, so good. But this motor training seems to me to be altogether inadequate. The leading pedagogues, in advocating motor training, have long said that they wished to "send the whole boy to school." But it seems to me that the training in vogue takes him apart, training one piece of him during this lesson, another part during that, so to speak. The whole boy is never trained at once, so far as I can see. His hand, his eye, his brain are all

trained; other parts also. But they are never really put to working all together in a hearty all-sided, simultaneous co-operation with each other. The brain is used to guide the hand, the eye is called in to help, but when is the boy as a whole, with head and arms and legs and trunk, called upon to launch himself as a unit at something, against something, for the purpose of making it yield by the whole force and weight there is in him? When is the boy encouraged to pit himself against something that is really offering a formidable obstacle to his will? When is he required to do something by which he may come to an understanding of his ability to overcome difficulties by putting his whole mind and body upon it? Our civilization demands the strictest attention to details. This, I believe, the present school strives admirably to secure. But the present time demands something more than that. Fifteen-dollar-a-week clerks, bookkeepers, salesmen, artisans, people who "fill" their places by attending to the details immediately demanded of them are numerous enough. But the complaint is heard everywhere that ambition to rise, and ability to rise beyond mere drudgery, are rare. We need more than anything else people with enthusiasm for their vocations, with an eye open for their manifold relations to everything around them, with ability not only to do the task allotted to them in their little pigeonholes, but ready to widen out, to grasp new opportunities, to assume greater duties, to do work outside the exact limits for which they are immediately compensated, to become leaders. "There is always room at the top," because so few are really willing to work hard to gain the top. Everybody is inclined to think that what is not immediately prescribed as his particular duty should be left for somebody else to do, and the result

is that so very much remains undone which should and could be done. The school should educate not to mere thinking and reflection, nor to mere small activities, but should create initiative, willingness, desire, anxiety to do anything which ought to be done and comes within one's ken. The school should give the pupil that indefinable tendency to take hold which is so generally lacking. Our education is responsible for the fact that the office boy sits still until ordered about, instead of finding something to do, and thus showing that he is interested not merely in his weekly stipend, but in the affairs of the firm. It is the fault of our education that the attendants in a hotel foyer are so remarkably anxious not to carry a satchel, that they let the guest wait, if it is not the turn of the one nearest at hand. Our education is to blame that laws are not enforced, because nobody wants to bother about it. You may not think it shows dignity for a district attorney to raid gambling places with a sledge-hammer; but you are yourself responsible for it because you refuse to do your little share in compelling respect for the laws. You make the laws, and see them violated daily, without really caring to see them enforced. If anybody tries to enforce them by means not to your fancy you grumble, criticise, find fault, and there you end. We have too many of that kind of citizens. We have too little active work. One of our citizens, much in the public eye of late, has recently expressed his preference for a healthy and active devil as compared to an angel down with nervous prostration. I think more of us are coming to that opinion every day. "The strenuous life" has been preached to us considerably of late years. It is beginning to find more and more admirers. That is what we want. And we are coming to it. Our civilization forces us to it.

President Roosevelt and Emperor William, J. P. Morgan and Charles M. Schwab, cowboys and the new generation of college presidents, you may criticise them all, but in your heart you respect them because they are doing something, while you are half asleep. We must have more men of that type. And it is our educational system which has the responsibility of furnishing them. But we must then have something else in our schools than we have at present. We have all heard the complaint that a college education unfits for practical life. While this statement is probably exaggerated, without doubt there is a kernel of truth in it. The college has never given us too much study, but it has given us too little of life. It is, however, improving. The new generation will be less open to criticism in this regard. Similar are the conditions in our schools. We train the will there. But it is a negative rather than a positive will, a will of inhibition rather than one of execution. "Don't do this! Don't do that!" A war is waged against sins of commission. Sins of omission flourish. What there is of training to a positive will is training in small things, not unimportant but physically small, detail work, handwork, poking at test tubes, making match stands, drawing maps. That is all very well; it is a necessary will training. But it must be supplemented. We must have wholehearted action of our whole persons, we must learn to "make things hum," and to make us feel the responsibility not merely for the little things directly assigned to us, but for all that which goes on around us.

A friend of mine, an orthopedic surgeon, who employs gymnasts for some of his work, not long ago spoke to me in terms of the highest appreciation of one of them, who was a graduate of a normal school of gymnastics, doctor of medicine, director of a college

gymnasium. And it was not chiefly her superior knowledge which made him place her ahead of all his other assistants. It was her ability always to find something to do, her inability to just "hang around." When one day upon finding her kneeling in a dark closet with scrubbing brush and a pail of water, he remonstrated with her on the necessity of leaving such labor to others, she simply declared that at that particular moment she had nothing else to do, that it was desirable that it should be done, and that she probably did it better than any of the servants anyhow. That is the spirit our education should give. Nothing too low, nothing too high for us to pitch into. If that spirit is cultivated, if will of that kind is made, our nation is safe. We may go astray sometimes, but we will surely find our way back. In the mean time we live; we cannot die from inactivity with that spirit in us. But we cannot get that spirit by talking about it, or of our plain duty, or by letting the pupils talk of it, or act in a small way. Associations of school boys, putting the discipline in the hands of the pupils, boys' congresses and similar means, are all good for forming character, but most of such features result in talk or in limited activities. It is an excellent training of character to have a culprit brought before a judge of his own class, to be prosecuted for his transgressions by his comrade to the right, while his classmate to the left acts as his defender, but the fight for justice then is after all only a wordy fencing bout. The college boys take more pride in winning a football match than an oratorical contest, I believe. Why? Because youth is nearer to physical nature than to intellectual life. The individual repeats in himself the phylogenetic development, mentally and morally, as well as physically. We must choose our educational means to conform to the individual's

development. We must catch his nascent periods. The long period in the racial development, when most of life was physical activity of a large kind, hunting, warfare, corresponds to a long period in the ontogeny. The interests arising then must be cared for and guided. If suppressed in their nascent periods, they will disappear forever. And these interests are mighty forces to create will of a wholesouled, overpowering kind. We cannot afford to let the growing tendencies die from lack of nutrition. We cannot afford to let the fertile field lie fallow. It must be cultivated. And from it shall grow strong will, fine characters, useful citizens, men in a true sense.

To supply the large activity which I thus find necessary for character formation I hold to be the true and most important office of sports. Nothing can equal them as agencies for the development of the desire "to be in it," to take part, to lend a hand. No agency exists, so far as I know, which is so powerful to develop presence of mind and courage, physical courage, in which we are so sadly deficient, and which is a breeder of moral courage and right doing. Last summer some young men were out for a lark. One of them, a nice young fellow, had during the previous winter been thrown much with men not in the habit of weighing their words so very carefully. He used various expletives not allowed in the most select parlors. A forceful "Jack, stop that!" soon came from one of the others, a college athlete. I do not know who was the better man of the two, I do not pit one against the other in Sunday-school book fashion. This athlete may, for all I know, have been inferior to "Jack" in many respects. But this I do know, that when the former found that the latter did not behave in accordance with his ideas of what was proper,

he immediately acted upon his convictions. That is courage. That is character. Those few words were to me more significant of the good he had got out of his athletic training than the whole number of medals and trophies bestowed upon him. Because I believe that the confidence in self, the desire to act, the will, the courage shown in these words of his, could be traced back to the athletic field. Had he been fed simply on lectures in ethics, he might have blushingly withdrawn from the company for fear of being contaminated. Passive virtue may be all right in its way, but it is aggressive combativeness which carries the day, whether for good or evil. It is a positive will we need. That is what I believe properly regulated sports can give. The common school branches do not suffice. Manual training is too one-sided and circumscribed to suffice. Properly conducted gymnastics can supply a great deal of it. But not all of the gymnastics that we see in our gymnasia is fit for it. Not even all of that which from other viewpoints is excellent. Gymnastics gains efficiency in this regard in the same degree that it approaches the sports. It is the jumping, and vaulting, and climbing, and tumbling, and giant swings, and the like, which are producers of this particular kind of large will, the producers of courage and self-reliance in the gymnastic lesson. The arm stretchings and head bendings and trunk twistings and exercises with dumbbells, wands, and pully weights have certainly no more influence in this regard than manual training. They may all supplement the sports and each other, but the former ought always to be considered as the chief ingredient, when the question arises for a programme primarily designed for the promotion of will, courage, self-reliance.

I therefore come to the conclusion that though gymnastics in our schools can, and should be, so arranged and conducted as to have a direct and immediate influence on mind development, there are other agencies, in the motor training as well as outside its field, which transcend it in importance, and that gymnastics cannot be successfully defended merely or mainly because of this direct influence. If we endeavor to do so we only invite a comparison with these other agencies which cannot but be detrimental to gymnastics. For training of sense perception, manual training is better; through language, history, mathematics, the natural sciences, we acquire "a multitude of conceptions and judgments," in comparison with which those acquired by gymnastics fade into insignificance; by all subjects in the school, rightly taught, we train attention to detail and devotion to duty just as well as by gymnastics; by well regulated sports we develop that larger, positive will of which I have spoken to a greater extent than by gymnastics in the true sense.

I do not deny the direct beneficial effects on the mind of gymnastics. Nobody does. The close inter-relation between mind and body is too well established to allow any Quixotic endeavor in that direction. I simply wish to warn as to exaggerations in the claims; that is all. Do not let us speak of the direct benefits on the development of the mind and its various "faculties" (which the philosophers no longer recognize as separate entities) as if we wished to make the impression that nothing but gymnastics is worth anything as an educational agency, and that the only or chief benefit from gymnastics lies in this field. For this is not true.

In the preceding paragraphs I have endeavored to give reasons for my opinions. These "reasons" are not

free from weakness. I know it well. They do not prove me right. But the question is not one susceptible of objective proof. The data are lacking. Such data as we possess showing mental development as a result of motor training in general, or gymnastics in particular, do not help us materially. The improvement noticed may as well be interpreted to be the result of improvement in the nutritive functions and, consequently, as indirect and mediate results. Our position in the matter must essentially rest upon faith, not on objective proofs. And if the latter are demanded the burden certainly must fall upon those who make a disputable assertion, not on those who deny it, as not proven.

But in claiming that certain advocates of gymnastics take a too extreme position when demanding its recognition, because of supposed direct educational influences, I wish to emphasize that there is one kind of education which to the greatest extent perhaps comes directly and immediately from motor training, and more particularly from gymnastics. But this education is not mental or moral in the strict sense. It is decidedly physical, material, corporeal. I mean education in co-ordination. With co-ordination we mean the harmonious working together of a large number of muscles, simultaneously or consecutively, for the execution of a given act with the least effort. The physical basis of the growing muscular co-ordination is the development of the governing nerve cells with their connecting links, and the habituation of these cells to respond in the same manner, with the same strength, in the same sequence, when stimuli of the same kind reach them. Muscular co-ordination is a result of the development and the education of the nerve centres. This comes directly from repetition of movements. And the movements are regulated by more

or less unconscious sensory impressions and judgments based on the memory of previous ones. We may, of course, speak of this as a mental development. It differs perhaps, not in kind but in degree, from what we usually denote as mentality. But the automatism involved in complete co-ordination seems to me to be just as closely related to the amoebic movements on the one hand and to such phenomena as geotropism, heliotropism and chemotropism on the other, and I doubt our right to speak of it or of them as mental phenomena in the true sense. The difficulty, of course, lies in the impossibility to draw a boundary line between the purely physical and the purely psychical fields. Such line does not exist, and when we, for the sake of convenience, make an artificial division, we cannot agree where to place the demarcation.

But whatever our viewpoint may be, development of co-ordination is a part of education, and it is directly gained by motor training. Manual training and similar forms bring about co-ordination to limited activities, and in this result it approaches training in manual trades, though it, of course, is more all-sided than the latter, which has its aim only in a particular movement or succession of movements. Sports of various kinds are, as a rule, more far-reaching in their results, but even in them the co-ordination becomes more or less specialized. Of all forms of motor training gymnastics, properly conceived and carried out, addresses itself to the most all-sided co-ordination, and furnishes, therefore, the most fundamental education in co-ordination. The importance of its many sided influence is to be found in many directions, as, for instance, in a general saving of energy in whatever we undertake, in maintenance of postures, correct from an esthetic as well as from an

hygienic viewpoint, and so on. To give the fundamental training to co-ordination I hold to be the main direct educative function of gymnastics, which must make itself felt in all forms of motion applied to definite external purpose, be it play or work.

With this I believe that practically all is said on the direct educational benefits from gymnastics. But there are other benefits to be taken into consideration, which we gain directly, and from which spring indirectly increased power of sensation, attention, perception, conception, volition and so on.

Man, as a neuromuscular machine, is the material to be formed by our education. This machine is meant for energy-expenditure. It must be so handled by the educator that the energy will be expended in the most profitable manner and in the most desirable direction. The first condition for this is that it shall be kept in good repair. The repair is made by a set of organs which supply not only the material with which to compensate the loss of substance, but which also supply the potential energy which the machine changes into kinetic form. The very first condition for success in our educational purpose is that the organs furnishing and distributing potential energy, and those which are to remove the refuse, be kept in good repair. Behind education this necessary condition stands, namely, that the organs of digestion, circulation, respiration, excretion and so on be kept in a high degree of health and regulated in such a manner as to work in harmony with each other and with the neuromuscular system. The knowledge of the relation between a healthy mind and a healthy body has come down to us from the ancients. But it is only in our own day that it has been put to the test by actual measurements; and while we formerly considered in a general

way physical health and strength, i. e., good nutrition, as necessary for mental health and strength, we now have at our disposal at least some results of investigations showing definitely that mental ability corresponds closely to the height and weight of the individual. As a preliminary to our education, then, we must consider it our duty to maintain the nutrition at as high a level as possible. But the actions of the organs involved are not, to any great extent at least, under the direct influence of our will. Hence we cannot properly speak of their education, a term that always presupposes volition. Any influence which we may bring to bear upon them in an indirect way lies outside of the educational field, strictly speaking. We call such influences hygienic when they are suitable to maintain and develop a normal nutritive function, and therapeutic when they are effective in restoring to its normal state a deranged function, ill adjusted to the conditions of life. These questions, then, confront us quite naturally in this connection: Has the school, besides its direct educational duties, any obligation to fulfill as to hygiene and therapy? If so, do any of these obligations fall to the special lot of the teacher of gymnastics? And how extensive are these obligations?

I imagine that there is unanimity of opinion regarding the responsibility of the school to the extent that everybody recognizes it as a perfectly legitimate demand that the health of the pupil must not deteriorate from any cause over which the school has control. This demand is even more imperative than that for positive educational results. Whatever failures the school may show in the latter, it must not fail in doing everything in its power to return the pupil to the parental home in as healthy condition as at matriculation. Satisfactory drainage, good ventilation, proper furniture, suitable al-

ternation between work and rest, a judicious choice of studies according to the abilities of the pupil, a presentation corresponding to his development, and hundreds of other factors are to be given due consideration. The duty of the gymnastic teacher in this general school hygiene is just as pressing as that of any other teacher, but no more so. That he, sometimes and somewhere, may take upon himself to appear as a special advocate of these matters is as natural as the fact that there are numerous teachers and directors who do not feel called upon to take a particularly active part in that kind of work. If he does so, he ought to be commended, not sneered at as posing for an expert in school hygiene. He only fulfills a duty as he sees it, because there is nobody else to do it. But this duty is a general one, a duty which falls to him as an official of the school, or as a citizen, if you please, not as a teacher of gymnastics. In the latter capacity he must see to it that in his particular part of the school building conditions are the best possible from a hygienic viewpoint, that nothing shall be used there which can be definitely shown to be detrimental to the general health of the pupil or prejudicial to any organ or function. Hygienic principles must, as Dr. Arnold says, serve us as contra-indications. They shall save us from using injurious movements as exercises. This is so imperative that to it everything else must yield. Thus we have here the first guide for our gymnastic selection. If any movement, combination of movements, or sequence of movements be found to have a definite deleterious influence upon the pupil from a hygienic point of view it must be ruthlessly discarded, be its educational value great or small. Unhygienic forms must be rigorously excluded, but the residue left after such a sifting process may be utilized, and if it be

utilized it must be applied strictly according to pedagogic principles. This is a statement to which I believe all will agree, whatever the system to which they owe allegiance. But all difficulties are not thereby swept aside. Even if the statement is simple and acceptable to all in the form given, it contains at least two points out of which disagreements may arise, viz., the presupposition that movements exist which may work injury to the system; and even if this be accepted as true we may still differ as to which movements are injurious and which not. As is well known, the Swedish gymnasts have always contended for the exclusion of certain movements, as being injurious. Dr. Arnold, representing the German school, takes the same ground. The apostles of the all-possibility principle must, of course, have denied the possibility of injury resulting from any movements whatsoever, if they meant anything at all by their assertion that "everything possible is rational." But in our day advocates of this principle are rare indeed. Dr. Geo. W. Fitz probably comes as near to upholding this defunct principle as any one. He is on record as believing that "probably no exercise is really harmful,"[1] though he distinguishes between such exercises as are best and such as are not so good. The use of exercises "not so good" is, of course, undesirable for this reason, if for nothing else, that they take time away from those which are best. But without dwelling upon that aspect of the question, it may perhaps be well, in view of the fact that some may be found who do not give unequivocal assent to the proposition that certain exercises are injurious, to inquire into the truth of the matter.

1. Proceedings of the Am. Ass. for the Adv. of Phys. Educ., at its seventh annual meeting, p. 204.

Let us then note that Dr. Fitz does not say that probably no movement is really harmful. He uses the expression "exercise." But what does he mean by "exercise" in this connection? If he means "movements selected as regard to time and space so as to correspond to the conditions and needs of the organism" there is, of course, nothing to say against it, because that means that the movements so selected are not only non-injurious, but beneficial. But he certainly cannot mean that. It would be nonsensical. We have no right to believe that he would be guilty of such tautology. Apparently he means that among the postures and movements which are habitually used by gymnastic teachers as exercises there is probably none which is really harmful. I cannot bring myself to the belief that he takes to-day the same position that DuBois Reymond took forty years ago, viz., that any possible movement is non-injurious and may properly be used as an exercise. Such a position would be so absolutely untenable that it would not be defended by anybody with the slightest knowledge of gymnastics. He does mean—let us at least suppose so—that intuition, which we all use more or less for guidance in our selection, in default of knowledge, practically never leads us astray, but that we all and each of us may well look with pride on our work and say: Behold, it is all very good!

I am of a different opinion. I believe that practically every lesson, even by the very best teachers, contains numerous forms which should be excluded as really harmful, and which will be excluded with growing knowledge.

Every one, of course, recognizes that practically every movement may become really harmful if its duration or the energy with which it is executed exceeds a

certain limit. Where this limit is to be placed is a difficult and far-reaching problem, but all of us ought to admit that the limit is not infrequently passed in our gymnasia. Every one recognizes, equally as a matter of course, that no movement, whatever its form, is really harmful if executed once, twice, or at rare intervals. But this does not prove Dr. Fitz to be right. "Exercise" does not imply the occasional performance of a movement. It means systematic and persistent practice. And therefore it is inconceivable to me how Dr. Fitz can maintain that no "exercise" is "really harmful."

At another place,[1] Dr. Fitz undertakes "a discussion of the claims of Swedish gymnastics," as he understands them, and endeavors to refute a majority of them. In the proper connection I shall try to show to what extent he fails to do so. Here I take up the matter only to give an idea how far this author differs from the Swedish gymnasts in one particular point, viz., the existence of injurious movements. According to him, the Swedes claim that "movements for exercises must be non-injurious, that is, must not contract chest or deform body, cause faulty positions. . . ." I do not know the exact place in the works referred to by him where this claim is made, but it is not necessary to compare it with the original statement, because I am sure that every Swedish gymnast is perfectly willing to subscribe to it in the form given by Dr. Fitz, provided no other meaning be read into these words than common sense dictates. It is true that the words quoted may, if we desire, for the sake of mere argument, be twisted into a sweeping assertion that a movement in order to be non-injurious must not, even for the briefest moment, cause

1. Proceedings and Papers of the Sargent Normal School Association. Season of 1899-1900.

a faulty attitude or a depression of the ribs. But I do not see why such asininity shall necessarily be ascribed to the Swedish gymnasts. Why may they not be considered as men of average intelligence, who in their turn presuppose average intelligence in their readers, who choose their words accordingly, and who expect to have them scrutinized by fair-minded critics, not by those who delight in painting Beelzebub on the wall for the pleasure of flogging him? Dr. Fitz says: "We have to consider that movements which compress the chest or which bring about deforming postures, if they merely carry the ribs or spine through their normal range of movements, tend only to keep these parts flexible, provided that the movements are balanced by full movements on the opposite side or in the opposite direction. The essential deforming postures to be avoided are those habitual postures which remain uncorrected." In putting this statement in opposition to the claim of the Swedes, he thus intimates that the two are contradictory. But is it necessary for the understanding of the unbiased reader that we insert in the claim some modifying words, to say that we must not "permanently, repeatedly, or for long periods compress the chest?" Is not that meaning evident? I have said above that "no movement, whatever its form (including consequently those by which the chest is compressed!), is really harmful if executed once, twice, or at rare intervals." And this is the position of all Swedes. There is nothing in Dr. Fitz's statement which refutes anything said or written by Swedish gymnasts, to my knowledge. It is, all of it, good gymnastic doctrine as taught by them. That is—on the face of it. To the thoughts implied, to the conclusions which might be drawn, and which are drawn, objections can and must be taken. They do not claim

that in itself it is injurious to depress the ribs or to flex the spine in any direction under the proviso made by Dr. Fitz. Like him, they believe that such movements tend to keep the parts flexible. Like him, they believe that these movements should be counteracted by movements in the opposite direction. They believe, however, that the daily work outside of the gymnasium is to a great extent such as to cause costal depression. They believe that the effects of this work are noticeable in the general appearance of the pupils. They believe that this is one of the habitual postures which remain uncorrected. They believe that, for the average individual, there is no need of exercising in order to increase the amplitude of the ribs downward, the daily work taking ample care of that. They believe that the time given up to gymnastics in our schools is so brief that no time should be given to exercises which compress the chest, but in all exercises attention should be paid to things more necessary. Dr. Fitz says that the chest compressors must be counterbalanced by other movements. Very well! Counteract the chest compressors of daily life, but do not bring in any new ones which again need to be counteracted.

Personally, I further claim that during a long historical period of gymnastic development this gymnastic doctrine was overlooked, except by the pupils of Ling. I claim that the old German Turner paid little or no heed to it. I claim that it was Rothstein's warfare against the German methods which was the most potent factor in introducing good form in the German gymnasia, thereby abolishing a whole series of "really harmful" movements. I claim that it is the direct influence of the Swedes in this country and their indirect influence through the Germans which has made possible the ac-

ceptance by the Americans of the proviso given by Dr. Fitz, that the movements must be "balanced by full movements on the opposite side or in the opposite direction." I claim that the fact that everybody now admits these chest compressors to be injurious without counteraction is due to the activity of the Swedes. I thus claim it as a particularly Swedish doctrine which Dr. Fitz and a host of others have been forced to accept after a vain struggle of nearly a hundred years. I claim that anyone who endeavors to make it appear that this statement is directed against the Swedish gymnasts shows a really sublime ignorance of the historical development of the subject.

The Swedes, in general, further claim that even in our day, notwithstanding the acceptance in words of this genuine Swedish doctrine, a great deal of the gymnastic practice contradicts it. Which shows that the love expressed for the doctrine is only skin deep and has not entered into the very souls of our gymnasts. This statement of course can not be proven by mere words. The proofs must be gathered on the floor. But go into a gymnasium, and you will see small children bending their heads and necks forward as an exercise, when they are doing that same deforming exercise hundreds of times in their schoolrooms, their homes, and on the playground. You may see the same little tots stretching their arms forward as an exercise, before they have gained such control of their shoulder girdles as to be able to prevent the shoulder-blades to get out of their proper places. You may see a man lying on his back on the floor without support for his feet trying to raise his body, thereby necessitating compression of the chest as an exercise. You may see boys vying with each other in chinning, every one of them compressing his chest

instead of expanding it, because it is simply a question of setting a record in the number of times the poor fellows can raise themselves. Nobody will for a moment contend that it is "really harmful" to fold the arms behind the back, but everybody with a vestige of sense would nowadays object strenuously to the habits of some years ago of demanding that the school children should maintain that posture during recitations. And I am sorry to say that the habit still prevails here and there even in our best school systems. Nobody claims that it is "really harmful" to place a wand behind the shoulders and bend forward to the position shown in Fig. 1. But I for one believe sincerely not only that no need of the organism is served, but that it is "really harmful" to make sixteen such movements in sequence in one lesson, as Mr. Reuter recommends in his "Wand Exercises,"[1] from which the figure is borrowed. I believe it is "really harmful" because it is conducive to bad posture. Nobody will maintain that any one of the postures or movements depicted by Mr. Ballin[2] and of which a few examples are here reproduced, as figures 2, 3, 4, 5 and 6, is "really harmful" if taken occasionally, but deliberately to practise them as exercises I hold to be decidedly detrimental to the proper development of the body.

I believe it will be well to quote from Mr. Ballin's book in order that we understand the position taken by him and many others. He says:

"Now, every logical thinker will be far from demanding that the school should be an orthopaedic institution. A system, which provides for exercises on the

1. Gymnastics. A textbook of the German-American system of gymnastics. Edited by W. A. Stecher. Boston, 1896, p. 69.

2. Hans Ballin: Gymnastics in the schoolroom. Erie, Penn. 1891.

Fig. 1

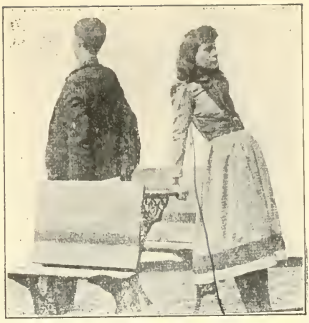

Fig. 2

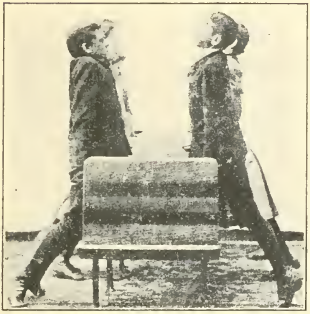

Fig. 3

Fig. 4

Fig. 5

Fig. 6

sanitary principle only, is of injury in the schoolroom, and its advocates have never been aware of the many educational demands necessary in the instruction of physical culture. Though exclusive orthopaedic exercises, as represented at present by some so-called systems, should unmercifully be expelled from the schoolroom, yet provision should be made to not instruct the pupil intellectually at the expense of his health, nor weaken him by the exercise of the necessary discipline. Health, by the practice of bodily training, shall rather be maintained than restored."

There is nothing in these words to which anybody can take exception. There is no "so-called system" which uses "exclusive orthopaedic exercises," but if there were, all would agree with the author that they should "unmercifully be expelled from the schoolroom." The author does not mention any system, though he, of course, means the Swedish, which he thinks "provides for exercises on the sanitary principle only," and the advocates of which, he thinks, "have never been aware of the many educational demands necessary in the instruction of physical culture." All Swedes agree with Mr. Ballin's words. None of them will agree to his thoughts as manifested by his book. They claim that such exercises as those given in the reproduced pictures do not "maintain health." They breed disease. They are "of injury in a schoolroom." They must "unmercifully be expelled." They are examples of "really harmful" exercises, in spite of Dr. Fitz's contention that no such exist. They interfere with the normal functions of the body. They create deformities. They are beautiful examples of what rational gymnastics ought not to be. To bar them out and to substitute others which better assist the normal growth and development of the pupils, is not

to use "exclusive orthopaedic exercises." It is simply to help in the maintenance of health, which Mr. Ballin says is his object, and which certainly ought to be the object of every teacher.

Perhaps some will claim that the pictures do not represent Mr. Ballin's ideas of how the exercises should be executed, that he himself would be the first one to object to the erroneous forms which appear in such large number in his book, and of which the reproduced pictures are only examples, and, further, that it is merely a fault-finding propensity of the present writer which finds its expression in such criticism as this. But such errors are altogether too common, not only in the numerous books published, but in the schoolroom and the gymnasia, to permit us to think that they depend merely or to a great extent upon the difficulties which always meet us when we wish to secure absolutely correct pictures. And the author in question, himself, claims that "the great advantage of this book over all other books of the same character is that the many illustrations do away with long explanations," while nowhere does he call attention to possible errors in these illustrations. He allows and encourages the public school teachers, for whom the book is intended, and who have no technical knowledge, to draw their inspiration from these pictures. It seems, therefore, as if Mr. Ballin, who at the time had the responsibility for the gymnastics in a public school system, was perfectly satisfied with these forms, i. e., that he could not distinguish between a beneficial and a "really harmful" movement.

The short meaning of this long discussion, then, is that there exist "exercises" which are really harmful, and that hygienic principles must serve us as guides in our selection, as contra-indications of what not to use.

The criticism is frequently made against the Swedish system of gymnastics that its advocates conjure up imaginary dangers, that they make their selection with such anxious care that their work becomes a mere tissue of formalism and pedantry, that it becomes poverty-stricken, that there is nothing left for the active child or youth to work on. Here is not the place to take up these charges. They are only brought forth in this connection to emphasize the fact that to the Swedes hygienic principles are of great value as contra-indications. The statement regarding chest depression is only an example. Whether the application of hygienic principles in this particular instance, or generally, when there is question of selection to guard against injurious exercises, is right or wrong, must be left to each individual teacher to decide for himself.

But the Swedish school of gymnastics claims that hygienic principles shall serve, if possible, a more important role than merely the negative one of guarding against injuries which may be contracted within the walls of the gymnasium as an immediate result of the exercises being composed of "really harmful" movements. Education having for its purpose to make the most of what there is in man, to draw out his powers, to develop them for activity in life, it would indeed be well if we had it in our power as teachers to guard him also against such evil influences which in the form of unsanitary and unhygienic conditions meet him outside the gymnasium, by increasing his powers of resistance, his vigor, by increasing the powers of the organs serving the various nutritive functions. The teacher of Latin and mathematics, history and music can do little or nothing in that direction. His work is mainly negative so far as hygiene is concerned. The gymnastic teacher,

however, has at his disposal a hygienic agency which can make itself felt outside the gymnasium. Therefore, and because health precedes education in importance, it is the basic dogma of the Swedish gymnasts that no system of gymnastics which does not strive for the very highest degree of health can be called a rational one, or have any claim to recognition. They believe, and strive to make their belief live in their practice, according to their ability, that we have no right to limit ourselves to the mere passive care which consists in applying hygienic principles merely or mainly as contra-indications against what not to do, but shall use them also to the extent of our powers in a more active manner as indications of what to do. This, they claim, is the only correct foundation upon which a system of gymnastics for any civilized people can and shall be built.

Is this an erroneous conception of the purpose of gymnastics in our educational institutions? I ask Dr. Edward M. Hartwell, whom I suppose we all recognize as one of the foremost students of gymnastic questions, and he answers: "The ends of exercise may be characterized, in a general way, as first, the promotion of health, and second, the formation of proper habits of action."[1] I ask Dr. Wm. T. Harris, United States Commissioner of Education, and surely one of our leading pedagogues, and from him come the words: "Physical training, I take it, is a part of the subject of hygiene,"[2] and again, "The student now studies this problem broadly, and focuses his attention on this relation of the voluntary to the involuntary, and tries to discover whereby the vital organs,—the lungs, the heart, the stomach, all the digestive organs, the kidneys,—in

1. American Physical Education Review. Vol. II., p. 140.
2. Report of the Physical Training Conference in Boston, 1889, p. 1.

short, how all the functions that are involuntary in their action may be assisted and influenced by voluntary action and motion."[1] I ask the pedagogues and school officials who have been instrumental in introducing physical training into our school systems for the reasons moving them. I ask the parents what they believe to be the benefits to be derived from school gymnastics. I ask the teachers of gymnastics themselves what they are trying to gain by their work. From practically all of them comes the answer, plain, strong, unanimous, unequivocal: "We want to preserve the health of our pupils. We want to maintain and increase their vitality. We want to preserve them from the physical deterioration which so often follows sedentary school life. We want to keep the color in their cheeks, the elasticity in their steps, the straightness in their backs, all of which the school life threatens to abolish." That is the purpose of gymnastics. That is the aim we seek. That is the object for which we work. Not exclusively, to be sure, but so overwhelmingly important, when compared with any other, that we may well speak of the latter as mere extras.

Would that each individual teacher of gymnastics might ask himself earnestly for what purpose he works. I am sure that the great majority, whatever the system according to which they frame their exercises, will agree with me that they seek primarily and directly the health of their pupils, that the various mental faculties can be and are favorably influenced directly by their physical work, but that the main benefits accruing to the intellectual and moral life of the pupils are gained indirectly as a result of their increased health and vitality.

1. Loc. cit., p. 3.

But if there is such a consensus of opinion as to the main object of the gymnastic instruction, and I believe there is, we might perhaps take it for granted that this is the object we ought to seek. I believe we could do so, were it not for the fact that of late years a few authors with influential names have appeared who have proclaimed, more or less distinctly, that gymnastics in our schools is not primarily or mainly for hygienic purposes; that it has the same essential purpose as other branches, Latin, mathematics, history, etc., viz.: directly and immediately to be a lever for increasing the mental powers. The foremost of these men are Germans, Dr. E. H. Arnold and Dr. Henry Hartung. And it is the same thought which is detected in Mr. Ballin's words, quoted a couple of pages back.

A few words of history here. Upon the crushing of the revolution of 1848, a large number of German Turner, who had served the cause of liberty in accordance with the principles inherited from the days of Jahn, came to the United States, and, with the accession of other arrivals, founded here Turnvereine, in which they perpetuated their exercises, physical and mental, and which they made centra of German language and German habits. Here and there a German was called to take charge of the physical training in educational institutions, but being perhaps somewhat clannish, they kept mainly to themselves and had no great direct and personal influence upon American gymnastics, which, however, in an indirect manner, was enriched by a large number of gymnastic forms, not used here till they were seen practised by the Germans. About 1880 fresh winds were beginning to blow among the Americans. Physical training as an integral part of the course of instruction for the public schools was being agitated as never be-

fore. The Germans were, of course, interested in this matter and assisted its progress. During this period of budding life there arrived in the country two Swedish gymnasts, Posse and Enebuske. They immediately threw themselves into the fight. They worked with all their might to convince Americans that the system of Swedish gymnastics was the one which should be adopted in this country. Nothing could have been more suitable to stir the Germans into life. It behooved them now not only to help in the good work of introducing physical training into the schools, but to prevent if possible the introduction of a sham, a system, which, many years before, had been proven false in Germany, which had unceremoniously been killed by Du Bois Reymond and Virchow, but which now rose as a ghost from times past. And thus we had, at all the meetings of gymnastic teachers, inevitable discussions regarding the merits and demerits of the respective systems. These discussions, of course, led to no result. The Americans listened to them, took part in them, observed the practical demonstrations. A few of them became converts to one system or the other. The great majority, however, considered that neither party was in possession of the whole truth, and that a system for America could be founded by borrowing ideas and gymnastic forms from both and modeling them into a whole, held together by new ideas born of the study of the physiological and psychical development of the child. A conference of physical directors was held under the auspices of the Y. M. C. A. in 1891. A report of this was published in the "Physical Education," a monthly edited by Dr. Luther Gulick. In this report acknowledgment was made to both the Swedish and the German system. Mr. Wm. Stecher, in behalf of the organization of German gym-

nasts, endeavored, in a letter, to show that in reality comparatively little of what had been credited to the Swedes by this conference was due them and emphasized, on the other hand, such as came from the German system. Editorially, Dr. Gulick answered, saying in substance that we Americans want the best. We do not care from where it comes. If it is Swedish, let us have that. If it is German let us adopt it. But the fact is that the Swedes have tried to convince us, while the Germans have to a great extent held aloof. We must, however, all pull together. Again, Mr. Stecher wrote that he was sorry that the German system was not so well known among the Americans as might be desired, which was attributable in part to the fact that the Germans do not believe that gymnastics can be studied from books, and circumstances had never driven them to give a complete exposition of their system and its methods in the English language. Dr. Gulick acknowledged the truth of this, but claimed that, after all, "principles can and should be stated." Thus directly challenged, Mr. Stecher wrote a new letter, to which Dr. Gulick retorted: "It does not seem to us that Mr. Stecher has stated the principles at all. At least he has not given us anything which would correspond to the principles that were given as underlying the Swedish system—nothing which would correspond physiologically to the Swedish Day's Order, or the gymnastic progression. We wish we might secure such a statement, if the principles exist."[1] Now entered upon the arena Dr. E. H. Arnold, of New Haven, Conn., and read, at the tenth annual meeting of the American Association for the Advancement of Physical Education, 1895, his paper,

1. Those who are directly interested in this controversy are referred to the "Physical Education," Vols. I-II.

"Some of the Principles that Guide Me in Teaching German Gymnastics," "in answer to many requests for a statement of the principles underlying" this system.

The following questions and answers were exchanged between Dr. Gulick, who had exerted the main influence to bring forth this paper, and Dr. Arnold:

Dr. Gulick—I would like to ask Dr. Arnold if I understand that this is a statement of the principles of the German system of gymnastics, as understood and taught at the normal school and as carried out by the teachers of gymnastics of the German schools, or is it his own?

Mr. Arnold—In general, it may be said to be that of the gymnastic school at Milwaukee. In detail, perhaps, it is my own.

Dr. Gulick—These principles have been formulated and are taught at the German school at Milwaukee?

Mr. Arnold—That I do not know.

Dr. Gulick, apparently, was not satisfied with this answer, but addressed an inquiry to Mr. Ballin, the then editor of "Mind and Body," which represents German gymnastics, who returned the answer that the German gymnasts do "not believe in censorship," and that "no single individual is considered an absolute authority."[1] And thus ended the endeavor to get from the German organization or its leading men an authoritative statement of the fundamental principles for which they, as a body, would stand. Inquiries were met with generalities and evasions. We have no declaration of principles by the Germans. Is it because they have no common ground upon which to stand? Is it because there is no *German system?* I consider it a matter of principle, this question of the object in view, and would consider it of extreme importance to know the German position in the matter. But the Germans seem unwilling to state it unequivocally. They do not repudiate Dr. Arnold's

1. "Mind and Body," Vol. II, p. 57.

views, but neither do they indorse them. The principles in his paper still remain his, not those of the Germans.

But as he is one of the leading German gymnasts; as no repudiation comes from their organization; as Dr. Hartung maintains essentially the same position, even using to a great extent the same expressions; as a number of other Germans have hinted in the same direction, we may suppose that the official German position is essentially that of Dr. Arnold, though I may state as my personal opinion, based upon conversations with a number of their teachers, that they are gradually breaking loose from it and arranging themselves with the Swedish confrères as to the object in view.

I refer my readers to Dr. Arnold's article, which I consider a most remarkable production, and will only here quote his contentions as to the aim of gymnastics:

"With me, gymnastics are mainly an art, or a science, if you wish, which teaches the use of our muscular apparatus in the most efficient way; i. e., adjust motion and locomotion so that the greatest amount of work may be done with the smallest expenditure, of course."

In other words, his aim is co-ordination, and for this purpose he educates the senses, develops the judgment as to distance, direction, resistance, etc., a purely educational process. Positive hygienic benefits he seeks only incidentally. He practically says: Avoid what is injurious, but do not endeavor to formulate your exercises for the purpose of gaining any direct hygienic effects beyond that which results from muscular activity in general. It would be futile. The "specific effects" claimed by the Swedes are imaginary, and, to some extent at least, proven false.

"I regard all exercises arranged to have specific effect on circulation and respiration as futile. I cannot assign to circulation and respiration the first place, when considering them for

establishing gymnastic principles. They both serve only part of one function, viz.: nutrition. Nutrition is dependent on a good many more factors than circulation and respiration. They fulfil their mission under guidance of nervous influences. These nervous influences are of a peculiar kind. We have no control over them by will. We may interfere with the respiratory movements by will, to a limited degree, but we cannot wilfully stop respiration altogether, nor can we regulate it for any length of time. Nor does our interference affect anything but inhalation and exhalation. That is the most crude process in respiration, that might be called outer respiration. Over the exchange of gases from air in the lung to the blood, middle respiration, and over the inner respiration, i. e., the exchange of gases from blood to tissue and vice versa, we have no wilful control whatsoever."

The term "specific effect," which is here employed by Dr. Arnold, was, so far as I know, first used by a Swede—Georgii—in 1847. But it has never been generally adopted either in Sweden or Germany. While the German Schreber accepted it as early as 1852, the Swede Sätherberg preached against it in 1855. Perhaps it might be well to define the term. When I use it, which is but rarely, I put it in opposition to the expression, general effects. I mean with the general effect of a certain group of exercises, that effect which is common to all the exercises of that group, while the specific effect of any one exercise belonging to that group is that by which it is characterized from the rest, that which is peculiarly its own. If a person stands with his arms extended sideward, palms down, and then rotates his palms up, there will be certain effects upon the supinators, their nerves and vessels, which will be similar, however the supination be executed. These are general effects. But if he supinates the hands, taking care that the axis of motion is the little finger, there will be a concomitant strong expansion of the chest which does

not result from a rotation around, for instance, the little finger. That is a specific effect. All slow trunk bendings forward from a standing posture have for general effect activity of the dorsal muscles. But if the trunk bending is done with one foot advanced and the feet parallel, there will be a specific effect in the extension of the ham-strings of the advanced leg, not noted in trunk bendings with the feet equally advanced. If I lie on my back and raise my legs, it does not matter how I do it, my abdominal muscles must always contract. That is a general effect of these movements. But if I stretch my arms in the direction of the head and there grasp a firm support, the raising of the legs becomes much easier than if I have the arms at my sides. That is the specific difference between the two different starting postures. These examples, which, of course, might easily be multiplied, suffice as explanation of the term. All exercises have some effects in common; these are general. Each exercise has some effect different from that of every other exercise; that is its specific effect.

Now as to the specific effects on respiration of certain exercises.

The notion is no doubt very general within the ranks of gymnasts of all schools, as well as among the lay public, that more oxygen will be absorbed by the system and more waste products will be given off by it as a result of simple voluntary increase of the air going into and out of the lungs in a given time. I have before me a book on "Respiratory Exercises,"[1] and I find in its preface these words:

"By modifying the respiratory movements in certain ways we can produce profound effects upon the organ-

1. Respiratory exercises in the treatment of disease. By Harry Campbell, M. D. New York, Wood & Co., 1899.

ism. Not only can we regulate the absorption of oxygen and the elimination of the respiratory excreta. . . ." In the body of the book, speaking of breathing exercises conjoined with various arm movements, the author also says that the enhanced respiratory activity is in considerable excess of what the exercises themselves would induce, and furthermore that the blood is kept in a high state of oxygenation and with a low percentage of CO_2. I firmly believe that it is the general opinion among both Swedish and German gymnasts that mechanical rhythmic motions of the arms in definite directions, called by the Swedes Respiratory movements, will assist the exchange between the air, the blood, and the tissues. I take the opportunity to deny, in behalf of the Swedish gymnasts, that they consider the greatest value of these exercises to lie in the improvement of the respiration. The main function of these exercises, according to them, is to improve the venous and lymphar return. I deplore that Posse has, in the synopsis on page 257 of his book, apparently given support to a wrong impression of the teachings of the Swedes. But this wrong impression is, to a great extent, removed by himself because he begins with an exposé of the influence on the circulation, passes over to the improvement of the lung tissue itself and of the respiratory muscles, and comes in the third place to deal with the changes taking place in the respiration.

Of these he says:

"As respiration grows deeper, the tidal volume of air increases, and more blood passes through the pulmonary vessels in the same given time. As a result a greater amount of oxygen will be taken into the blood; more energy will be supplied to the body; the metamorphosis of tissue will be increased.....Also at exhalation the increased tidal volume carries with it a greater amount of carbon dioxide and water, so that some of the most

essential elements of excretion are being eliminated with greater rapidity; waste matter is being removed in greater quantities."

Posse thus asserts, as Campbell does, as most gymnasts do, specific effects upon both middle and inner respiration by respiratory movements. This Arnold denies.

We all know that a greater pulmonary ventilation takes place because of these movements. We also know that even after the first few respiratory movements, when this ventilation is completed, there is still an increased quantity of CO_2 exhaled, which conclusively shows that more CO_2 is given off by the blood in a given time. We know that part of this increased CO_2 is due to the increased activity of the respiratory muscles. Do we not also know that another part is due to increased excretion of the CO_2 previously formed and existing in the extra pulmonary parts of the body? Landois at least says that "ein sichtbarer Einfluss auf die Entleerung der im Körper bereits gebildet vorhandenen CO_2 hat sich zu erkennen gegeben." And when Vierordt shows a change in the CO_2 excretion of from 258 ccm. to 1392 ccm. a minute, according to the number of respiratory movements, or a change of from 21 ccm. to 72 ccm. in one single movement, according to its depth, it is rather difficult for me to believe that all of this comes from the increased muscular activity. There can be no doubt in my mind that the middle respiration is enhanced as to the excretion of CO_2, just as Posse and Landois say.

Now it seems to me likely, or possible, that Dr. Arnold has misunderstood the position of the Swedes in this regard; that he has thought that they promulgated the theory that by respiratory movements more CO_2 would be extracted from a given quantity of blood or

more O would be put into a given quantity of blood. So far as I know this has never been taught by them. It is worth noting that Posse says that the increased exchange takes place as a result of thoracic aspiration. If this is not sound physiology, I certainly do not know what is. But even had the Swedes taught that a greater arterialization of any given quantity of blood takes place, they would have some good support for their view. Landois says: "Intensive respiratory movements —even artificial ones—increase the O absorption of the blood to saturation." Under normal conditions the O-solution in the arterial blood is about 90 per cent, and consequently we have it in our power to increase the middle respiration 10 per cent in this regard. Turn the matter in any way I want, I cannot but find support for the position of the Swedes and a refutation of Dr. Arnold's stand.

Pflüger, v. Voit and numerous other physiologists have apparently established that the number and depth of the respiratory movements have practically no influence on the metabolism. They declare Arnold in the right and Posse to be wrong. But whatever experimental evidence may be brought forth, I think it safe to assume that everybody, physiologists as well as gymnasts, does recognize that deep, powerful respiration has a mighty influence on the general nutrition. It is not my desire to crawl out of an untenable position. But are we not all agreed that even occasional deep filling of the lungs, directly or indirectly, helps to increase our vigor?

Dr. Arnold also denies that we can gain any specific effects on the circulation. In absence of any denial by him of any particular claim by the Swedes in this regard, I take it for granted that his position here is due to a misunderstanding of what the Swedes do teach. Be-

cause Dr. Arnold cannot mean exactly what he says that over circulation "we have no wilful influence, if we exclude the interference of wilfully regulated respiration and its effect on circulation by way of thoracic aspiration." We certainly can influence the venous and lymphar circulation differently by different postures and movements. Gravity, change of vascular tension, and the vein-pumps are three factors to the effectiveness of which in this regard Braune has called our attention, and which nobody as yet has successfully denied. We certainly can divert the circulation from the abdominal tract to the muscles and the integument by muscular contraction in general. By localizing this contraction in this part of the body or in that, we certainly can direct the arterial flow more or less at will. We certainly can influence the pulse rate differently by different movements. We can influence the circulation in hundreds of ways by using different exercises. Are not these specific effects? If a person comes to the gymnasium with deficient portal circulation, and another with a fatty heart, one with tachycardia, the other with a normal pulse rate, does Dr. Arnold give them the same exercises, or tell them that they might just as well go bicycling as to take any prescribed exercises in the gymnasium? I think not. He will choose special exercises for their specific effects. So will we all.

The only specific effect upon circulation which Dr. Arnold mentions as disproved is "the decrease of the heart's action" by "slow leg movements." He says that Dr. Anderson has disposed of that claim of the Swedes, and Dr. Fitz, in the article to which reference has been made, takes the same position. As a matter of fact, Dr. Anderson has proven absolutely nothing in the matter, as I

shall show when I come to take up the "Leg movements."

I thus claim that each exercise has a specific effect upon both respiration and circulation, and upon a number of other functions as well. I claim that it is our duty to utilize these specific effects for direct positive hygienic benefits, and not to be satisfied with the mere negative benefit of avoiding injury, nor to allow "hygienic rules to determine for us classes and forms of exercises only generally, not in detail, not the exercises themselves." In fact, I have pondered long over the meaning of this statement, with the result that finally I have come to the conclusion that it is likely that here, as at so many other occasions, the reason for misunderstanding is to be found in different meanings attached to words, and that the key lies in the words "forms" and "exercises." It may mean, and I hope it does, that each exercise consists of a number of movements. The form of the latter, that is the movements themselves, is to be determined by hygienic considerations. But the order and the manner in which these different movements are to be taught, individually, in combinations, or in sequences, that is the exercises, as distinct from their individual phases, are to be determined on pedagogic principles. If that is the author's meaning, I am ready to accept it without change, as I shall show when I come to speak of progression.

Before we leave the hygienic purpose of gymnastics, a few words should be said regarding the "muscle building" tendency of a number of teachers. These belong to no particular school, but I believe them to be the products of what Dr. Arnold has called the "developmental school," and to which I have attached the term the "anthropometric school." To this school the tape

measure is of the greatest importance. Its members delight in bringing forth voluminous muscles. They do so ostensibly for hygienic purposes, and seem to believe that a great volume of muscle tissue is synonymous with health. And as a result, our muscular "professors" adorn their advertisements with pictures of themselves as proofs of the superiority of their different "systems."

Now, it is a fact that health presupposes well developed, active muscles. But well developed muscles in the true physiological sense are not necessarily large muscles. The well developed muscle is characterized by its tonicity, its firmness, its solidity, its small amount of interstitial fat. All these qualities are gained by moderate activity, according to the general constitution of the individual. If the activity be increased beyond a certain limit, the volume may increase and thus give the impression of still better development, but it is in reality not a physiological betterment but a true hypertrophy with enlarged and degenerated nuclei, distinguished from pseudo-hypertrophy mainly by the difference in the fat and connective tissue. Such a muscular system drains the other organs of vitality. It is the kind of muscles which deteriorate rapidly as soon as the severe activity which brought them on is given up. It is a condition which does not assist in carrying on the serious work of life, but is good only for strength-tests and the like. It is an actual handicap to the average man, because with the degeneracy of the muscular system goes a degeneracy of the various vital organs. Our business men, our scholars, our professional men, the men upon whom falls the burden of advancing our civilization, need not large muscles. Neither do those whose duty it is to perform manual labor need a special training to develop their muscles. This training comes automatically from

their daily labors, if only their nutritive organs are healthy and nutrition is supplied them. All need good, healthy, well developed muscles, firm to the touch, rapid to respond, with long range of motion. None needs big muscles. The teacher therefore shall never see the aim of gymnastics in building up masses of muscular tissue. He must look beyond, below the muscles. He must see to the harmonious development of the vital organs.

Some pages back I put the question whether there are any special duties as to hygiene and therapy which fall to the lot of the teacher of gymnastics. I have tried to the best of my ability to show that he certainly has very positive hygienic duties. But how about the therapeutic field? Shall he treat diseases? Shall he be a kind of mechanical doctor to whom John and Jane may go for their aches and pains, for their crooked backs and flat chests, for their breathlessness and their headaches? I answer most emphatically, that the gymnastic teacher, as teacher, has no duties whatsoever in this regard, except the very pressing one to keep his hands off. He must not compete or interfere with the family physician. I wish to put that statement in the strongest possible terms. It requires a special training to take therapeutic measures, a training which the gymnastic teacher has not and needs not. Whenever he steps from his own field as a teacher to dabble with disease, of which he knows nothing, he is a quack, and should be repelled with just as much energy as he himself should show when a physician endeavors to direct gymnastic exercises of which he knows nothing, upon the fallacious plea that his medical training gives him an insight in gymnastics.

But if the gymnast shall not practise therapy, he must frequently hover on the boundary line to that field. His main duty is hygienic, and hygienic measures are not only preventative, but curative as well. As a teacher he stands to some extent in the place of the parents. The mother has a right and a duty to care for the children in their small ailments. So the teacher can and shall give advice. If the mother is right in giving a hot bath and tucking the little one into bed when he has a cold, the teacher has an equal right and duty to advise the pupil to take some special exercises when he sees the latter going around with his chest on his back. This is not to pose as an expert in therapy. It is only the application of common sense. If the teacher has not got too elevated opinions of his own far-reaching knowledge, but keeps well within his limitations, there need be no trouble. He may, of course, make a mistake now and then, but no blame need attach to him on that score any more than it falls to the mother who in a particular case would have done better to send for the physician immediately, instead of trying home remedies. We must recollect that the public does not consult physicians before they are obliged to do so, and we cannot make them do it. Common sense and hearty co-operation between teacher, parents, and the physician will solve the problem.

But if the therapeutic activity of the teacher is minimal when the question is of the individual and his ailments, it grows in importance when it concerns the class as a whole. Take for instance a class in a public school of one of our large cities. The pupils are frequently to a great extent of the same race, subject to essentially the same environment, breathing the same air, eating the same kind of food, keeping the same hours, dwelling

in the same kind of tenements, playing the same games, sitting the same number of hours on the same school benches occupied with the same kind of work. What wonder then that the class as a whole is representative of a definite physical type with the same excellencies, the same deficiencies. It is a fact, is it not, that in a class of fifty, it is nothing unusual to find half the number more or less kyphotic, about an equal number having lordosis, 10-15 per cent showing a tendency to pronated feet, quite a few having habitual headache, or nose bleed, or cold feet. Now, as I have said, I may advise each one, though I do not think that I ought to treat them individually. But should I not also see to it that I give the whole class such exercises as have a direct bearing upon the prevailing defects? Should I not even divide up the class into sections according to the types in existence, so as to be able to differentiate the work somewhat in accordance with the needs of each? You may sneer at this as practising therapeutics at wholesale, but after all is it not the duty of the teacher? He knows, we all know, that the great majority of these cases will not come under more competent hands than our own, except in case the incipient defects get time to develop into serious troubles. If each school had a school physician, if to each gymnasium there were attached a practitioner of therapeutic gymnastics, the problem would be different. But these conditions do not exist, and the teacher shall therefore do what little he can do. It is, of course, true that the teacher is supposed to deal with normal children. But the normal child, that is, the average child, is deficient in many directions. The deficiencies are more or less incipient, to be sure, but that is just the reason why something may be hoped from the otherwise inefficient actions of the teacher. To abandon

all corrective measures for the children depicted by Mr. Ballin for fear of making an orthopedic institution of the school is preposterous. I do not believe he speaks for the rank and file of the German gymnasts, because I believe his conception of the duties of the teacher of gymnastics in this regard to be fundamentally wrong. I know that his conception has never found resonance among the Swedish gymnasts. And I believe that the school authorities of our land never have and never will subscribe to his ideas. As proofs of this I quote the following questions submitted by the Board of Examiners to candidates for positions in the high schools of New York City: What exercises would you prescribe for a sunken chest (1899)? Give a specific instance of some physical defect or deformity that is susceptible of correction by gymnastic exercise. What exercise would you prescribe for such defect of deformity (1899)? Mention three cases requiring corrective gymnastics likely to arise in high school work. Prescribe exercises for each (1900). Describe the effects on the bodily functions of kyphosis. Explain the causes of lordosis. Mention three ways of treating scoliosis (1900).

These and similar ones show conclusively that the Board of Examiners expect the teacher to do something to correct common defects. Are they wrong in this? I think not. Do they want to make orthopedic institutions of the schools? I think they only want the teachers to apply common sense.

SUMMARY.

The prime purpose of gymnastics in our educational institutions, including not only schools, academies, colleges, etc., but also voluntary associations, like the Turnvereine and the Y. M. C. A., is hygienic.

Together with sports and games it must supply such an amount of activity as to keep high the general vigor of the system in spite of the deteriorating influence of the sedentary life connected with study and business.

Every posture and movement has effects in various directions which distinguish it from every other posture and movement. Some of these "specific effects" may be injurious. Such injurious postures and movements must, in accord with the hygienic purpose of gymnastics, be excluded. Other "specific effects" are distinctly beneficial in regulating, in some way or other, one or more functions included in the general term nutrition. These must be utilized. The general invigorating activity must not, therefore, consist of any and all kinds of movements, but each movement used as an exercise must be selected for a definite hygienic purpose.

The hygienic purpose includes, to a certain extent, the aim to alleviate common defects and deformities. But curative measures against actual disease do not belong in the general gymnasium.

By raising the general health of the pupil the gymnastics shall indirectly assist in true educational work, making possible better mental development upon the basis of a better physique. This shall be done more directly by the application of pedagogic principles in the teaching of this as well as every other branch, so that the material, selected upon hygienic grounds, is presented in such a manner and sequence as to correspond to the gradual unfolding of the mental powers of the pupil.

To speak of education in sense perception, attention, judgment, reasoning, etc., as the chief object of the gymnastic instruction under normal conditions is a mistake which should be deprecated, because thereby the hygienic purpose may be overshadowed.

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